# HW for ISSUE 428: the scope notes of E59 Primitive Value and E61 Time Primitive

## E59 Primitive Value

This is the main class. The scope note (paragraph 2) is slightly adjusted.

### E59 Primitive Value

Subclass of: [E1](#_E1_CRM_Entity) CRM Entity

Superclass of: [E60](#_E60_Number) Number

[E61](#_E61_Time_Primitive) Time Primitive

[E62](#_E62_String) String

[E94](#_E94_Space_Primitive) Space Primitive

[E95](#_E95_Spacetime_Primitive) Spacetime Primitive

Scope Note: This class comprises values of primitive data types of programming languages or database management systems and data types composed of such values used as documentation elements, as well as their mathematical abstractions.

The instances of E59 Primitive Value and its subclasses are not considered as elements of the universe of discourse the CIDOC CRM aims at defining and analysing. Rather, they play the role of a symbolic interface between the scope of this model and the world of mathematical and computational manipulations and the symbolic objects they define and handle.

In particular they comprise lexical forms encoded as "strings" or series of characters and symbols based on encoding schemes (characterised by being a limited subset of the respective mathematical abstractions) such as UNICODE and values of datatypes that can be encoded in a lexical form, including quantitative specifications of time-spans and geometry. They have in common that instances of E59 Primitive Value define themselves by virtue of their encoded value, regardless the nature of their mathematical abstractions.

Therefore they must not be represented in an implementation by a universal identifier associated with a content model of different identity. In a concrete application, it is recommended that the primitive value system from a chosen implementation platform and/or data definition language be used to substitute for this class and its subclasses.

Examples:

* ABCDEFG (E62)
* 3.14 (E60)
* 0
* 1921-01-01 (E61)

In First Order Logic:

E59(x) ⊃ E1(x)

## E60 Number

The scope note of E60 Number is already minimal and can be kept unaltered

### E60 Number

Subclass of: [E59](#_E59_Primitive_Value) Primitive Value

Scope Note: This class comprises any encoding of computable (algebraic) values such as integers, real numbers, complex numbers, vectors, tensors etc., including intervals of these values to express limited precision.

Numbers are fundamentally distinct from numerically expressed identifiers in continua, which are instances of E41 Appellation, such as Gregorian dates or spatial coordinates, even though their encoding may be similar. Instances of E60 Number can be combined with each other in algebraic operations to yield other instances of E60 Number, e.g., 1+1=2. Identifiers in continua may be combined with numbers expressing distances to yield new identifiers, e.g., 1924-01-31 + 2 days = 1924-02-02. Cf. E54 Dimension.

Examples:

* 5
* 3+2i
* 1.5e-04
* (0.5, - 0.7,88)

In First Order Logic:

E60(x) ⊃ E59(x)

## E61 Time Primitive

The last two paragraphs of the he scope note of E61 Time Primitive are almost identical to the second and fourth paragrpahs of the scope not of E59 Primitive and should be deleted. This makes the scope note analogue to the scoepnote of E60 Number

Subclass of: [E41](#_E41_Appellation) Appellation

[E59](#_E59_Primitive_Value) Primitive Value

Scope Note: This class comprises instances of E59 Primitive Value for time that should be implemented with appropriate validation, precision and references to temporal coordinate systems to express time in some context relevant to cultural and scientific documentation.

Instantiating different instances of E61 Time Primitive relative to the same instance of E52 Time Span allows for the expression of multiple opinions/approximations of the same phenomenon. When representing different opinions/approximations of the E52 Time Span of some E2 Temporal Entity, multiple instances of E61 Time Primitive should be instantiated relative to one E52 Time Span. Only one E52 Time Span should be instantiated since there is only one real phenomenal time extent of any given temporal entity.

Examples:

* 1994 – 1997
* 13 May 1768
* 2000/01/01 00:00:59.7
* 85th century BC

In First Order Logic:

E61(x) ⊃ E41(x)

E61(x) ⊃ E59(x)